

SECTION 451
PATCHING PORTLAND CEMENT CONCRETE PAVEMENT

451.01 DESCRIPTION: The work shall consist of the partial depth patching of spalls, potholes and corner breaks in Portland Concrete Pavement by removing the broken, damaged, or disintegrated concrete pavement, including any asphaltic concrete patches, from spalled or damaged area of the pavement surfaces and patching materials in accordance with the Specification and in reasonably close conformity with the existing pavement cross section.

451.02 MATERIALS: Materials for repairing and patching Portland Cement Concrete Pavement shall conform to the following requirements:

Twenty-four Hour Accelerated Strength Concrete*	Section 504
Epoxy Adhesive, Type II for Bonding Plastic	
Concrete to Hardened Concrete	Section 886
Closed-Cell Polyethylene Foam	Section 833.10

*This Section is modified to permit the use of a Portable Concrete Mixer of adequate capacity. Slump requirements shall be from 1 to 3 inches inclusive.

451.03 CONSTRUCTION: Concrete-patching operations shall be conducted in one area at a time and in a safe and expeditious manner that offers minimum closure of the runway. The work shall be accomplished with other operations in progress within the area when sufficient manpower and equipment is capable of reopening the runway as early as possible.

Any concrete patches that are completed and found to contain cracks, shrinkage, compression failures, or become damaged during construction or by traffic prior to final acceptance shall be removed and replaced at the Contractor's expense.

A. REMOVAL AND PREPARATION OF REPAIR AREA:

1. Partial Depth Patching of Spalled Joints: The limits of the defective areas shall be as directed by the Engineer. The areas shall be marked, in rectangular shapes, by the engineer.

The rectangular marked areas shall be sawn with neat vertical faces not less than 2 inches or more than 3 inches in depth. All broken or "unsound" material within the sawed area shall be removed with utmost care exercised not to damage or fracture the "sound" concrete substrate to be left on the bottom of the spall area. The use of sharp pointed bits or excessive force is prohibited.

Prior to placing the patching material, the face of the existing transverse and/or longitudinal joints bordering the repair area(s) shall be sawed 5 inches deep and ¼ inch wide with the full-depth of the saw cut extending at least one inch beyond the limits of the repair area(s) in each direction. Just prior to placing the patching material, the surface within the repair area shall be thoroughly cleaned by sandblasting and air blasting to remove any oil, dust, dirt, or traces of asphaltic concrete, "slurry" from saw operation, and other contaminants. Following this, ¼ inch closed-cell polyethylene foam shall be supported during the placing operation such as to maintain a true, straight joint line. The method used shall be approved by the Engineer.

2. Partial Depth Patching of Pavement Potholes: The Engineer shall determine which pavement potholes to repair.

The procedures previously specified for repairing spalled joints shall be used for repairing “potholes” within the pavement surface except the requirements regarding the use of ¼ inch closed-cell polyethylene foam. Do not apply.

3. Full Depth Patching of Pavement Corner Breaks: Repairs under this procedure are limited to small corner breaks at the junction of longitudinal and transverse pavement joints where the crack intersects with the transverse joint within 18 inches or less when measured along the transverse joint from the longitudinal joint.

The Engineer shall determine which corner breaks meet this criteria. These corner breaks shall be marked on the pavement by making a rectangle area 3 inches beyond the limits of the crack to serve as a guide for sawing. The marked area shall be sawed 3 inches deep with neat vertical faces to isolate the section of pavement to be removed with utmost care exercised not to damage or fracture the edges and faces of the pavement bordering the repair area. The resulting face of the pavement below the 3 inch sawed area shall be left reasonably vertical with no fractured or damaged areas.

Just prior to placing the patching material, the surfaces within the repair area shall be thoroughly cleaned by sand blasting, and air blasting to remove any oil, dust, dirt or traces of asphaltic concrete, “slurry” from saw operation, and other contaminants. Following this, a ¼ inch wide piece of closed-cell polyethylene foam shall be placed full-depth on the face of the transverse joint bordering the repair area.

B. REPAIR METHOD:

Repair shall be accomplished only when the average daily temperature is 50°F or higher.

After following the requirements previously specified, all concrete surface areas within the repair area shall be completely coated with a film of Type II Epoxy approximately 10 to 20 mils thick.

Concrete shall be deposited in the repair area while the epoxy is still tacky and shall be rodded, spaded, and sufficiently vibrated to form a dense, homogeneous mass of concrete, completely filling the area of the patch. The concrete shall be screeded to the proper grade and allowed to remain undisturbed until the water-sheen disappears from the surface. The concrete shall then be covered with wet burlap or membrane curing compound. Curing shall continue for at least 3 hours and until the section is opened to traffic.

The finished surface including joints shall meet a surface tolerance of 1/8 inch in 10 feet. The Contractor shall at all times utilize such approved measures as are necessary to keep all pavement surfaces adjacent to this operation reasonably clean of excess

grout and other materials. Unless otherwise specified, all patching operations shall be completed and the area reopened for traffic by sunset each day.

451.04 MEASUREMENT: The area measured for payment will be the number of square feet of surface area patching complete in place and accepted.

451.05 PAYMENT: The area measured as provided above will be paid for at the Contract Unit Price per square foot. Such payment shall be full compensation for any required sawing, removing an asphaltic concrete patching material or the spalled, broken or damaged Portland Cement Concrete; cleaning the open area by air and/or sandblasting; placing, finishing and curing the patching material and forming new transverse and longitudinal joints, including all equipment, tools, labor and incidentals necessary to complete the work.

Payment shall be made under:

Item No. 451 Patching Portland Cement Concrete Pavement . . Per Square Foot